

Serial No. 09/782,101

In the Claims

Please substitute the following claims for those currently on file in the application:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Currently Amended) An arrangement for buffering, during ~~at least~~ a finite predetermined retention time, a digital optical signal having a predetermined digital level, comprising:

a semiconductor laser element with an injection current threshold of operation, below which optical loss exceeds optical gain and above which optical gain exceeds optical loss, and optical input for receiving the optical signal;

a current source connected to said semiconductor laser element and arranged to inject an injection current to said semiconductor laser element to establish an optical gain process in said semiconductor laser element, the injection current having an amplitude at said threshold of operation such that said optical gain and said optical loss within said semiconductor laser element are equal in order to keep said digital optical signal on said predetermined digital level;

a controller connected to said current source to provide a current control signal to said current source to control an amplitude of said injection current; and

an optical detector arranged to detect optical power content of said semiconductor laser element and to provide a feedback signal to said controller, said controller being arranged to generate said current control signal in dependence on said feedback signal.

7. (Canceled)

8. (Canceled)

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9. (Previously Presented) The arrangement according to claim 6, further comprising an optical output switch connected between an output of said semiconductor laser element and an output line, and connected to said controller to receive an output switch control signal to control outputting said optical signal to said output line.

10. (Original) The arrangement according to claim 9, further comprising an optical output directional filter connected between said output of said semiconductor laser element and said optical output switch.

11. (Original) The arrangement according to claim 10, further comprising an optical input switch connected to said input of said semiconductor laser element, and connected to said controller to receive an input switch control signal to control inputting said optical signal to said semiconductor laser element.

12. (Original) The arrangement according to claim 11, further comprising an optical input directional filter connected between said input of said semiconductor laser element and said optical input switch.

13. (Original) The arrangement according to claim 11, wherein said controller is arranged for controlling said current source such that said current source clears said semiconductor laser element by turning off said injection current during a predetermined clearing time period prior to switching said digital optical signal to said semiconductor laser element by said optical input switch.

14. (Canceled)